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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,529	09/04/2003	Tzong-Ru Han	612407-1 (nm-x-040.2)	5570

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O'Melveny & Myers LLP  
IP&T Calendar Department LA-1118  
400 South Hope Street  
Los Angeles, CA 90071-2899

EXAMINER
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YANG, MINCHUL

ART UNIT	PAPER NUMBER
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2891

MAIL DATE	DELIVERY MODE
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12/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/655,529

**Applicant(s)**

HAN ET AL.

**Examiner**

Minchul Yang

**Art Unit**

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **Detailed Action**

### ***Drawings***

1. The drawings are objected to because of insufficient quality of figure 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins ("Collins reference A", Phys. Rev. Lett., 2001).

Collins reference A discloses a nanostructure sensing device comprising (see, e.g., figure 2 and related text):

Regarding claim 1: a substrate (see also page 3128, col. 1, last paragraph: "SiO<sub>2</sub> substrates"), said substrate being at a temperature of less than 100 °C (see, e.g., page 3130, col. 2, second paragraph: "300 K"); at least one nanostructure disposed over the substrate (the caption of figure 2: "MWNT", multiwalled carbon nanotube), said nanostructure being at a temperature of at least 100 °C (see also page 3130, col. 2, first paragraph: the MWNT as shown in figure 2 was heated up to at least 500 °C before the breakdown occurred); and at least two conductive elements disposed over the substrate and electrically connected to the at least one nanostructure (figure 2);

Regarding claim 2: wherein the nanostructure comprises a nanotube (see the examiner's statement above regarding claim 1);

Regarding claims 4 and 5: wherein the nanostructure is maintained at a temperature of at least about 200 °C; and wherein the nanostructure is maintained at a temperature of at least about 300 °C (see the examiner's statement above regarding claim 1); and

Regarding claim 6: wherein the nanostructure is maintained at an elevated temperature by passing a current of at least about 10 μA through the nanotube (figure 2: up to at least 200 μA).

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins ("Collins

reference B”, Science, 2001) as evidenced by Collins reference A.

Collins reference B discloses a nanostructure sensing device comprising (see, e.g., figure 1 and related text):

Regarding claim 1: a substrate (figure 1b), said substrate being at a temperature of less than 100 °C (see, e.g., page 706, col. 3, third paragraph: “room temperature”); at least one nanostructure disposed over the substrate (the caption of figure 1c: “SWNT robes”), said nanostructure being at a temperature of at least 100 °C (figure 1c: the thinning process involves a step of heating the SWNT robes up to at least 500 °C before thinning occurs. See also Collins reference A, page 3130, col. 2, first paragraph); and at least two conductive elements disposed over the substrate and electrically connected to the at least one nanostructure (figure 1);

Regarding claims 2 and 3: wherein the nanostructure comprises a nanotube (figure 1b); and the nanostructure comprises a plurality of nanotubes (figure 1c);

Regarding claims 4 and 5: wherein the nanostructure is maintained at a temperature of at least about 200 °C; and wherein the nanostructure is maintained at a temperature of at least about 300 °C (see the examiner’s statement above regarding claim 1); and

Regarding claim 6: wherein the nanostructure is maintained at an elevated temperature by passing a current of at least about 10  $\mu$ A through the nanotube (figure 1a: up to at least 150  $\mu$ A).

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minchul Yang whose telephone number is (571) 270-1750. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM E.S.T..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272 -1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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*Matthew C. Laneau*  
Matthew C. Laneau  
Primary Examiner